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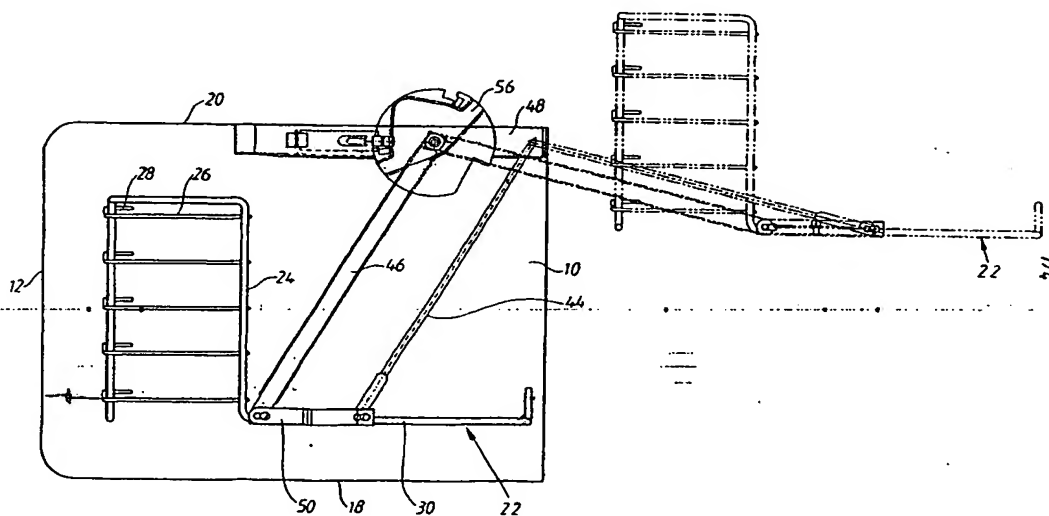
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(54).Title: ARRANGEMENT IN AN OVEN, IN PARTICULAR FOR DOMESTIC USE



(57) Abstract: Arrangement in an oven, preferably for domestic use, comprising an oven cavity (10) and a supporting means (22) provided in the oven and adapted to support a load in the form of one or a plurality of baking plates, gridirons or the like disposed one above the other, wherein the supporting means (22) is swingably mounted to allow for the load to be moved between a first end position in the oven cavity (10) and a second end position outside thereof where the load is elevated with respect to its position in the oven cavity (10). The arrangement includes a locking device (52, 54) adapted to lock the supporting means (22) in the respective end position, the locking device (52, 54) being of a design such that movement of the supporting means (22) beyond the respective end position cancels the locking action of the locking device (52, 54) and permits movement to the opposite end position.

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Case: W 741

Arrangement in an oven, in particular for domestic use

The present invention refers to ovens, in particular for domestic use, and refers to an arrangement in such an oven wherein a supporting means is adapted to support a load in the form of one or a plurality of baking plates, gridirons or the like disposed one above the other, wherein the supporting means is swingably mounted to allow for the load to be moved between a first end position in the oven cavity and a second end position outside thereof where the load is elevated with respect to its position in the oven cavity.

Ovens of the kind referred to having swingable load supporting means are disclosed in the patent publications US-5,447,148-A and EP-0147815-A2. The first-mentioned publication describes a locking device allowing for a swingably journaled load supporting means for baking plates, gridirons or the like to be locked inter alia in a first end position in an oven cavity and in a second end position situated outside thereof and elevated with respect to the position of the supporting means in the oven cavity. The locking device is operated by means of a handle-like operating means which is pulled out to cancel the locking action of the locking device. When released, the handle is brought, under influence of spring force, to a position in which the locking device locks the supporting means in the position taken.

Based on the prior art technique referred to the object of the invention is to simplify handling and to eliminate the need for any special operating means and that continued movement of the load supporting means beyond the respective end position is sufficient for cancelling of the locking action and permitting movement of the supporting means to the opposite end position. The object is achieved in an arrangement having the characterizing features indicated in the appending claim 1. Preferred embodiments have been included in the accompanying sub-claims.

The invention will now be described more in detail in

connection with two embodiments with reference to accompanying drawings in which :

Fig. 1, schematically, in a side view shows an oven with an oven equipment supported by a supporting means in a position in the oven cavity and a position outside thereof, respectively;

Fig. 2 schematically shows the oven of Fig. 1 in a front view;

Figs. 3-5 are detail views of a first embodiment of a locking device cooperating with the supporting means of Figs. 1 and 2.

Fig. 6 schematically, in a side view shows an oven of a design essentially the same as the oven shown in Fig. 1 but provided with a second embodiment of a locking device cooperating with the support means;

Fig. 7 schematically shows the oven according to Fig. 6 in a front view;

Figs. 8-11 are detail views which, in an enlarged scale, shows the second embodiment of the locking device cooperating with the supporting means of Figs. 6 and 7.

In the various drawings corresponding details have been given the same reference characters.

With reference to Figs. 1 and 2 there is schematically shown an oven cavity 10 comprising a rear wall 12, two side walls 14, 16, a bottom wall 18 and a ceiling 20. In the oven cavity 10 a supporting means 22 is provided for a load in the form of one or a plurality of baking plates, gridirons or the like, disposed one above the other. In the embodiment the supporting means has the form of a supporting frame 24 made of wire and having supporting planes 26 and locking means 28 adapted to cooperate, in a way not described in detail, with corresponding locking means provided on a baking plate or a gridiron for these load carriers to be retained on the supporting frame 24. The bottom plane of the supporting frame is formed by two side parts 30, 32 and by a rear transverse part 34 and a front one 36. The front part 36 has a handle 38 in the central part thereof.

The supporting means is carried by two pairs of slewing brackets 40, 42 each comprising a front slewing bracket 44 and

a rear slewing bracket 46. At the said wall 14 the slewing brackets 44, 46 are turnably connected to the side part 30 on the supporting frame 24 in positions disposed at a suitable distance from each other. The bearing consists of recesses in
5 a flat bar 50 secured to the side part 34. In the recesses taps are inserted in a lockable way. The slewing brackets 44 and 46 extend parallel to one another and are swingably journalled in a longitudinal flat bar 48 disposed at the outside of the oven cavity. The slewing brackets 44, 46 and the flat bars 48 and 50
10 form together a parallelogram. The pair of slewing brackets 42 at the opposite side wall 16 are designed identically.

In the embodiment described the supporting means 22 with its load shall be able to be swung between two end positions, one inside the oven and another outside thereof in which the
15 load is elevated with respect to its position inside the oven. Moreover, the supporting means 22 must be lockable in its end positions so that in these positions the load is steadily and securely supported. To this end two locking devices 52, 54 are provided at the side walls 14, 16 of the oven. The two locking
20 devices are of the same design and only one of them will be described in detail. Hence, also with reference to Figs. 3-5, the locking device 52 at the side wall 14 comprises a rotary plate 56 journalled in the same position as the slewing bracket 46 and following the swinging movement thereof. The rotary
25 plate 56 has two recesses 58, 60 each of which provided with a locking edge 62 adapted to cooperate with a pawl 64 which is displacably mounted on the flat bar 48. By means of a spring 66 the pawl 64 is biased towards a first tread on the rotary plate 56 in the form of a circumference 68 and when the recess
30 58 has taken a suitable position the pawl will radially enter said recess 58 to engage with the locking edge 62.

In order to allow for movement of the supporting arrangement 22 from one end position to the opposite one the pawl 64 has to be moved from its position in which it engages
35 with the locking edge 62 and to that end the rotary plate 56 is provided with a lifting surface 70 with the object during the

continued turning of the rotary plate in the direction leading to the end position presently taken by the supporting arrangement 22 to lift the pawl 64, bringing it out of engagement with the locking edge 62 and causing an end 72 of the pawl, facing the side surface of the rotary plate, to be brought into engagement with a gliding plane 74 recessed into ~~the side surface of the rotary plate. The gliding plane 74 is~~ delimited by a curve 76 the object of which is to move the pawl 64 outwards from the respective recess 58, 60 and to the circumference 68 on the rotary plate 56 where the pawl 64, by the action of the spring 66, leaves the gliding plane 74. During the continued movement towards the opposite end position the pawl 64 follows the circumference 68 and thereby, the pawl is prepared when arriving at the recess 60 to enter same to engage with the locking edge 62 therein.

The arrangement described above operates in the following way. Assuming that the supporting means 22 has taken the position in the oven cavity 10 shown by continuous lines in Fig. 1, the first measure is to operate both locking devices 52, 54 for cancelling of their locking action. To this end, by means of the handle 38 the supporting means 22 is brought further into the oven cavity 10 whereby the rotary plate 56 is turned so that the lifting surface 70 causes the pawl 64 to be moved out of engagement with the locking edge 62 and the end 72 of the pawl to be guided into engagement with the gliding plane 74. When, in this way, the locking action of the locking devices 52 and 54 has been cancelled the supporting means is caused to perform a swinging motion out of the oven cavity to the end position indicated by dash dotted lines in Fig. 1. During this movement the rotary plate 56 is turned in the opposite direction and the pawl 64 is guided by the curve 76 outwards towards the circumference 68 and in a position approximately halfway between the recesses 58 and 60, respectively, the curve 76 coincides with the circumference 68 causing the pawl 64 to leave the gliding plane 74 and during the continued movement to follow the circumference 68 towards

the recess 60. As the pawl 64 reaches the recess 60 it is operated by the spring 66 to enter said recess into engagement with the locking edge 62 causing the supporting means 22 to become locked in the pulled-out position. The engagement
5 between the pawl 64 and the locking edge 62 is maintained by the weight of the load. This is also the case when the supporting means 22 is situated in the opposite end position in the oven cavity 10.

When it is desired to bring the supporting means with its
10 load back to the oven cavity 10 the supporting means 22 is brought further upwards which, in the way described, causes the locking action of the locking devices 52, 54 to be cancelled and the downward movement can be performed. During this movement the same course is performed as during the upward
15 movement but now with the rotary plate 56 turning in the opposite direction with respect to the direction valid during the upward movement. This has been made possible by the fact that the rotary plate 56, on each side of the position in which the curve 76 coincides with the circumference 68 has been given
20 an identical but inverted shape.

In Figs. 6-10 there is shown a second embodiment of the oven which is designed essentially in the same way as the oven shown in Figs. 1-5. Accordingly, the description given above with reference to Figs. 1-5 is valid, where applicable, also
25 for the second embodiment. However, the locking device has been given a different design to be described below.

In the second embodiment, as in the first embodiment, two locking devices 78, 80 are provided, one at each of the side walls 14 and 16, respectively. As the locking devices 78 and 80
30 are identical only one, the locking device 80, will be described in detail.

The locking device 80 comprises a cam 82 which together with a flat bar 83, having the same function as the flat bar 48 in Fig. 5, being secured to the side wall 16 by a suitable
35 joint. The cam 82 cooperates with a pawl 84, in this embodiment movably journaled on the slewing bracket 46. The pawl 84 can

be displaced along a longitudinal surface of the slewing bracket 46 and is guided by means of a bent end portion 86 which enters into a slot 88 cut out in the slewing bracket. The pawl 84 is provided with a further bent end portion 90 running
5 in the slot 88. The object of the bent end portion 90 is to cooperate with the cam 82 in order to lock the supporting arrangement 22 in either of its end positions. A spring 89 operating in the same way as the spring 66 of Fig. 3, is fixed at one end to the pawl 84, the other end of which being fixed
10 to a turning shaft 91 provided for the slewing bracket 46.

As best shown in fig. 8, the cam 82 is provided with a locking edge 92 leading to the perimeter of the cam via an L-shaped recess 94. One part 94a of the recess 94 delimits a gradient plane 96 provided for moving the bent end portion 90
15 of the pawl 84 out of engagement with the locking edge 92 and into engagement with a side surface 98 of the cam 82. Influenced by the spring 89, after having passed the gradient plane 96, the bent end portion 90 of the pawl 84 is displaced upwards on the side surface 98 to a position 100 situated so
20 that there is no risk for the bent edge 90, in this phase, to return into engagement with the locking edge 92. The upward movement along the side surface 98 is limited by a delimiting edge for the slot 88 which cooperates with the bent end portion 86 on the pawl 84.

25 The locking parts on the cam 82, just described, the locking edge 92, the L-shaped recess 94 and the gradient plane 96, are provided to cooperate with the pawl 84 to lock the supporting arrangement 22 in its retracted position in the oven cavity 10. In order to lock the supporting arrangement 22 in
30 its extended position outside the oven, shown by dash dotted lines in Fig. 6, the cam 82 is provided with a corresponding locking edge, a L-shaped recess and a gradient plane denoted 102, 104 and 106, respectively. Correspondingly, the part of the L-shaped recess delimiting the gradient plane 106 is
35 denoted 104a.

A cam surface 108 on the cam 82 interconnects the recesses

94 and 104 and this cam surface 108 is adapted to cooperate with the bent end portion 90 on the pawl 84 to guide it between the two locking areas on the cam 82 when the supporting arrangement 22 is moved between its two end positions. From the position 100 the bent end portion 90 runs along a path 110 on the side surface 98, faintly outlined by dashed lines, until, influenced by the spring 89, the bent end portion is pulled over the edge into engagement with the cam surface 108 for continued movement towards the L-shaped recess 104 and the locking edge 102 provided therein. During movement towards the L-shaped recess 94 and the locking edge 92 the bent end portion 90 on the pawl 84 follows a corresponding path (not shown) on the side surface 98 until brought over the edge on the cam 82 into engagement with the cam surface 108.

The arrangement described with reference to Figs. 6-10 operates in the following way.

If it is assumed that the supporting arrangement 22 has taken its retracted position in the oven cavity 10, see Fig. 6, the bent edge 90 on the pawl 84 engages the locking edge 92 and the supporting arrangement 22 is locked in this position. Now, if the supporting arrangement 22 is operated to swing further into the oven cavity 10, by the gradient plane 96 the bent edge 90 on the pawl 84 will be moved into engagement with the side surface 98 on the cam 82 and, influenced by the spring 89, to be brought upwards to the position 100. This first swinging movement of the supporting arrangement 22 beyond the locking position in the oven cavity 10 releases the pawl 84 so that when the supporting arrangement 22 is swung in the opposite direction towards its pulled out position outside the oven cavity 10 the bent edge 90 on the pawl 84 will follow the dashed lined path 110 until it reaches the edge on the cam 82, where, influenced by the spring 89, it is pulled down into engagement with the cam surface 108. The bent edge 90 follows the cam surface 108 during the continued movement towards the pulled out end position for the supporting arrangement 22. When reaching the L-shaped recess 104 the bent edge 90 is pulled

into the recess into engagement with the edge 104a by the action of the spring 89. In this position the swinging movement cannot continue and when the supporting arrangement is released the bent edge 90 follows the recess 104 into engagement with the locking edge 102 which is a locking position for the supporting arrangement 22 in the pulled out position.

Then, when the supporting arrangement 22 is again to be brought into the oven cavity 10 it is operated to swing in the same direction as to the pulled out position beyond the locking position whereby, by the gradient plane 106, the bent edge 90 is moved into engagement with the side surface 98 on the cam 82. Under the action of the spring 89 the bent edge 90 is then further moved to a position corresponding to the position 100. When the supporting arrangement 22 is further moved in the direction towards its retracted position in the oven cavity the bent edge 90 on the pawl 84 follows a path similar to the path 110 into engagement with the cam surface 108. The bent edge 90 then follows the cam surface 108 until the recess 94 is reached where, by the action of the spring 89, the bent edge is pulled into the recess into engagement with the recess portion 92a. The swinging movement towards the retracted position for the supporting arrangement 22 is now completed and when released the supporting arrangement will move slightly in the opposite direction, whereby the bent edge 90 on the pawl will follow the recess portion 92a into engagement with the locking edge 92 causing the supporting arrangement to be locked in its retracted position in the oven cavity 10.

The invention is not restricted to the embodiments described above and shown in the drawings but further embodiments can be included within the scope of the appending claims.

C l a i m s

1. Arrangement in an oven, preferably for domestic use, comprising an oven cavity (10) and a supporting means (22) provided in the oven cavity and adapted to support a load in the form of one or a plurality of baking plates, gridirons or the like disposed one above the other, wherein the supporting means (22) is swingably mounted to allow for the load to be moved from a first end position in the oven cavity (10) and a second end position outside thereof where the load is elevated with respect to its position in the oven cavity (10),
10. **characterized** in that a locking device (52, 54) is adapted to lock the supporting means (22) in the respective end position, the locking device being of a design such that movement of the supporting means (22) beyond the respective end position cancels the locking action of the locking device (52, 54) permitting movement to the opposite end position.
- 15 2. Arrangement according to claim 1, **characterized** in that the locking device (52, 54) comprises a rotary plate (56) which is turnably journaled and the movement of which is synchronized with the swinging movement of the supporting means
- 20 (22), said rotary plate (56) being provided with a first and a second locking edge (62), respectively, defining the respective end position of the supporting means (22), and the rotary plate (56) being adapted to cooperate with a pawl (64), radially displaceable with respect to the rotary plate and spring
- 25 biased in the direction of displacement as well as axially towards the rotary plate (56).
3. Arrangement according to claim 2, **characterized** in that between the locking positions defined by the locking edges (62) the rotary plate (56) is provided with two different treads for the pawl (64), one of which is a circumference (68) on the
- 30 rotary plate (56) and the other is a curve (76) which at the locking positions (58, 60) is retracted some distance from said circumference (68) and along at least a section between the locking positions (58, 60) coincides with the circumference

(68).

4. Arrangement according to claim 3, **characterized** in that the curve (76) delimits a tread for the end of the pawl (64) facing the rotary plate (56), said tread forming a gliding plane (74) for the pawl (64) recessed in the side surface of the rotary plate.

5. Arrangement according to claim 4, **characterized** in that adjacent the respective locking edge (62) the rotary plate has a lifting curve (70) adapted, during turning of the rotary plate (56) beyond either of the end positions of the supporting arrangement 22, to lift the pawl (64) out of engagement with the locking edge (62) and to convey said pawl to the gliding plane (74).

6. Arrangement according to claim 5, **characterized** in that during the movement of the supporting means (22) from one end position to the other the pawl (64) is adapted first to follow the tread formed by the curve (76), with the end (72) sliding on the gliding plane (74), and as the curve coincides with the circumference (68), under the action of the spring force, to proceed to follow the circumference (68) during the continued movement into engagement with the locking edge (62) provided at the other end position.

7. Arrangement according to any of the preceding claims, **characterized** in that the supporting means (22) is swingably mounted in the oven cavity (10) by means of two pairs (40, 42) of slewing brackets (44, 46) interspaced and turnably journaled adjacent to the ceiling (20) of the oven cavity, the opposite ends of said slewing brackets (44, 46) are correspondingly turnably journaled on the supporting means (22) at a distance from one another to form a parallelogram, wherein at the journalling position for the inner slewing brackets 44, in the respective pair (40, 42), situated adjacent to the ceiling (20), a rotary plate (56) is provided to follow the movement of the slewing bracket (46) and to cooperate with the pawl (64).

8. Arrangement according to claim 2, **characterized** in that

the locking device comprises at least one fixedly mounted cam (82) cooperating with a pawl (84) adapted to move with respect to the cam (82) in synchronism with the swinging movement of the supporting means (22), wherein adjacent to the respective
5 end position for the supporting means (22) the cam (84) is provided with a locking edge (92;102) cooperating with the pawl (84) for locking of the supporting means (22) in the position taken.

9. Arrangement according to claim 8, **characterized** in that
10 the respective locking edge (92; 102) is connected to a cam surface (108) in the form of a perimeter of the cam (82), said cam surface interconnecting the locking areas provided on the cam (84) for the respective end positions of the supporting means (22), said interconnection having the form of an L-shaped
15 passage (94; 104) the outer end of which is adapted to catch the pawl (84) and the inner end of which connects to the locking edge (92; 102).

10. Arrangement according to claim 9, **characterized** in that the cam (82) has a side surface (98) along which the pawl (84)
20 is arranged to run on its way between the locking positions on the cam (82), wherein, from the respective locking position the pawl (84) is adapted first to follow the side surface (98) and then to follow the cam surface (108) to the opposite locking position.

25 11. Arrangement according to claim 10, **characterized** in that the cam (82) is provided with a gradient plane (96; 106) adapted to guide the pawl (84) from engagement with the locking edge (92; 102) and to the side surface (98) of the cam during the movement of the supporting means (22) beyond the locking
30 position.

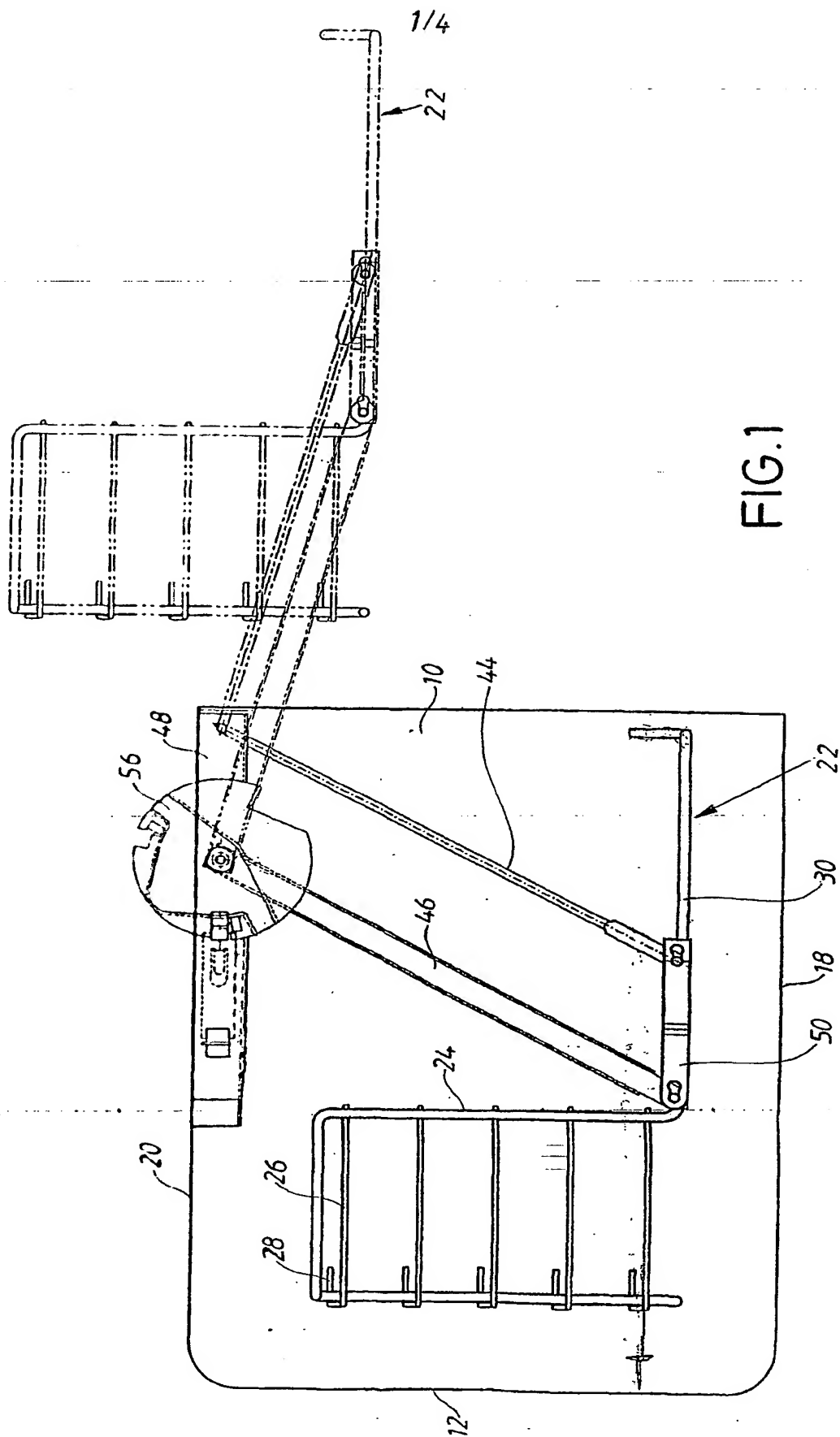
12. Arrangement according to claim 11, **characterized** in that spring means (89) are provided to operate the pawl (84) to follow the L-shaped passage (94; 104) to the locking edge (92; 102) on the cam (82), the spring means further being operable
35 to cause the pawl (84) to move from the side surface (98) of the cam into engagement with the cam surface (108) thereof.

13. Arrangement according to claim 12, **characterized** in that the pawl (84) is provided on a flat supporting bar (46) adapted to swingably carry the supporting means (22), said spring means (89) being adapted to bias the pawl (84) in the direction
5 towards the swinging center of the flat supporting bar (46) and in the direction towards the flat supporting bar (46).

14. Arrangement according to claim 13, **characterized** in that the pawl (84) is provided with first and second bent portions (90, 86) running in a slot (88) cut in the flat supporting bar
10 (46), said first bent portion (90) being adapted to cooperate with the locking edge (92; 102) on the cam (82) whereas the second bent-portion is adapted, when the first bent portion (90) has been brought by the gradient plane (96; 106) to the side surface (98) of the cam (82), to determine a position for
15 the first bent portion (90) in the direction of said flat supporting bar (46) preventing it from returning into engagement with the locking edge (92; 102).

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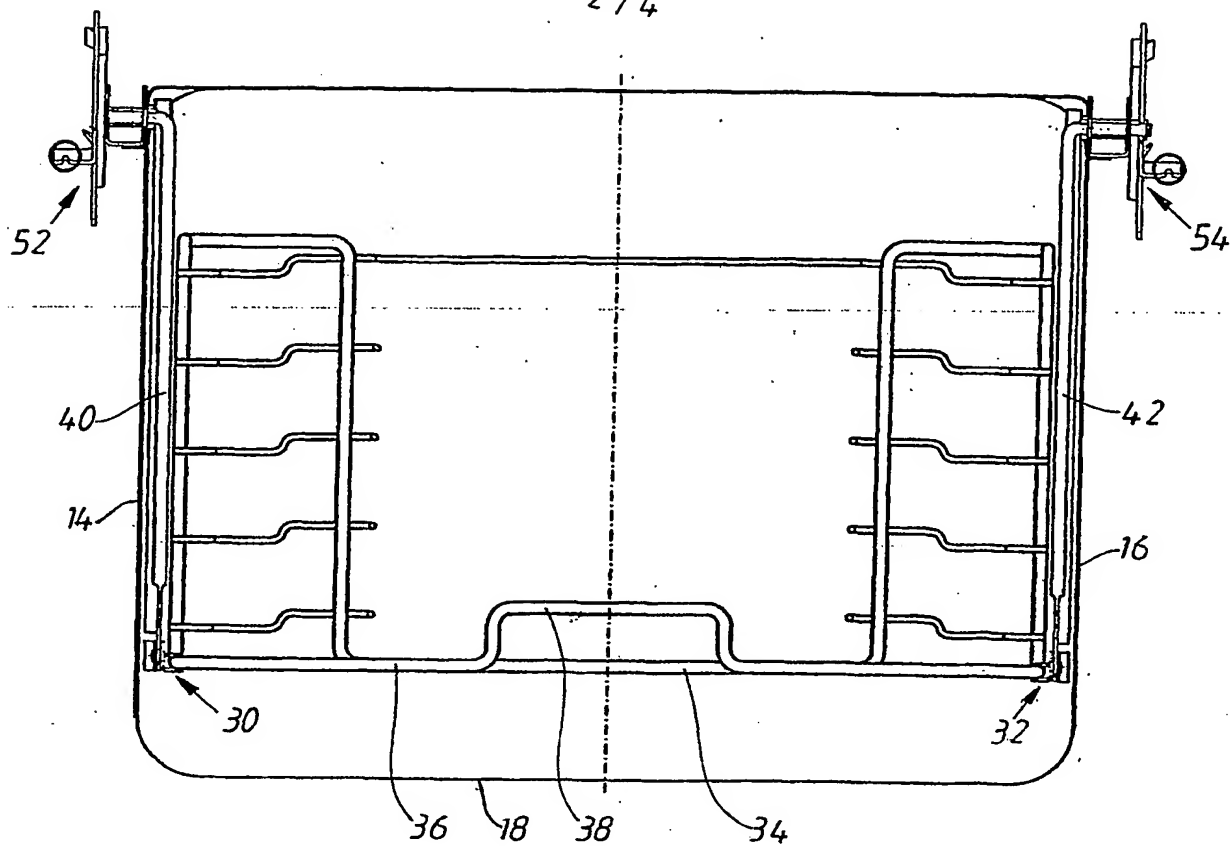


FIG. 2

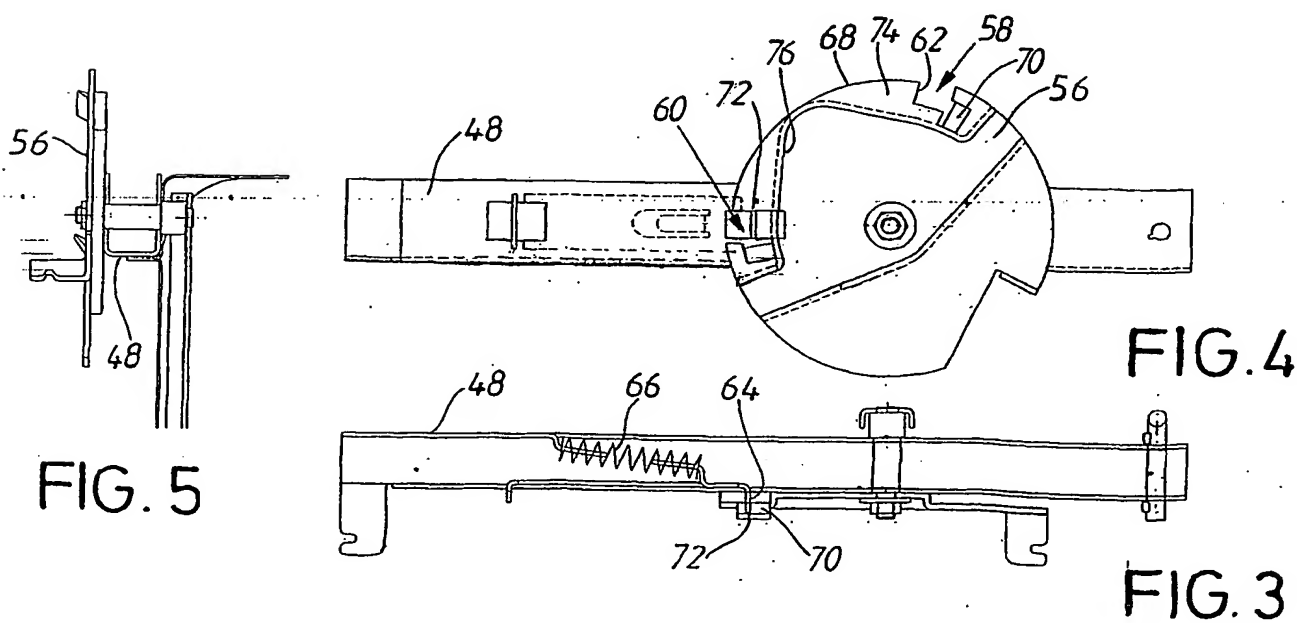


FIG. 5

FIG. 4

FIG. 3

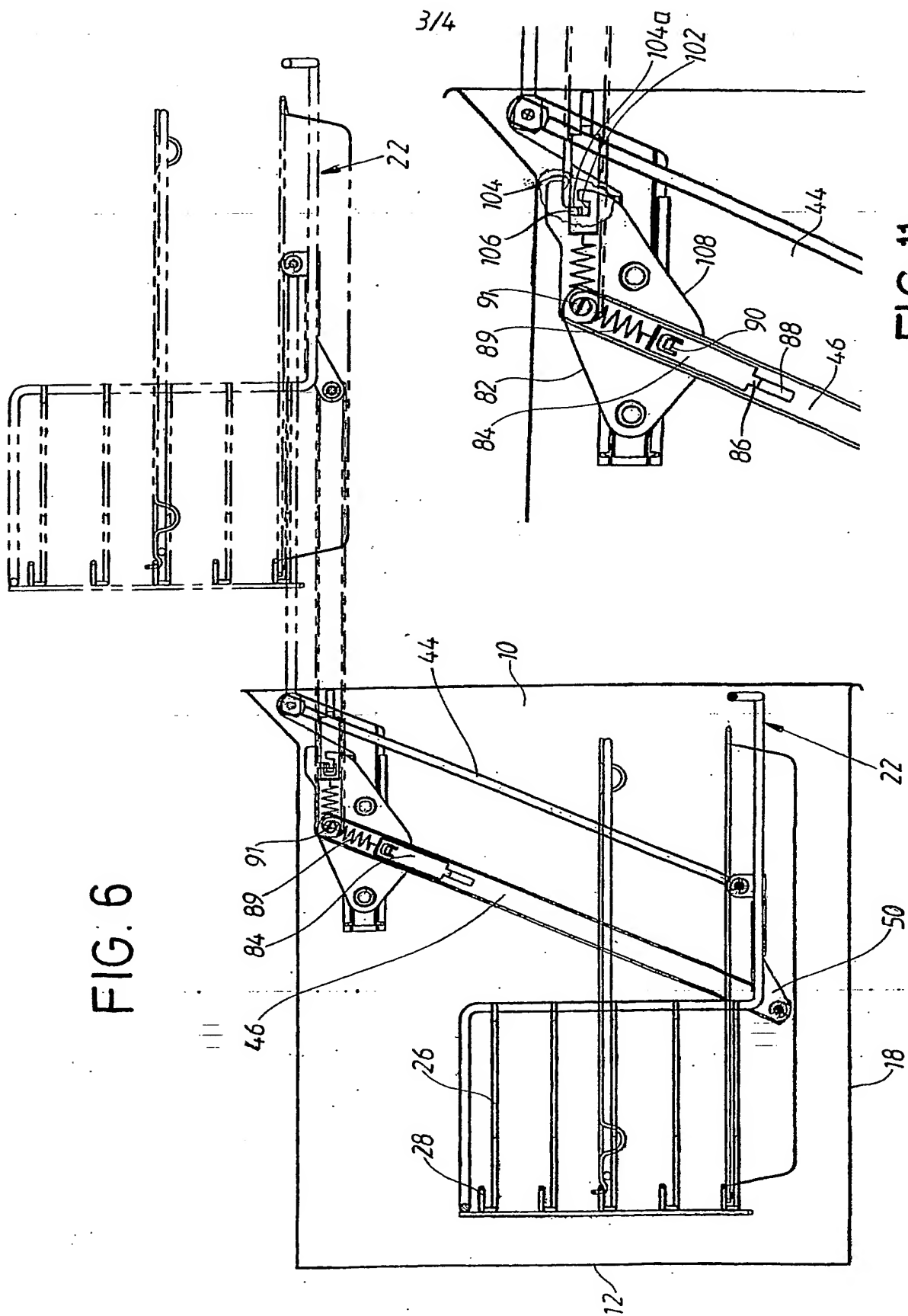
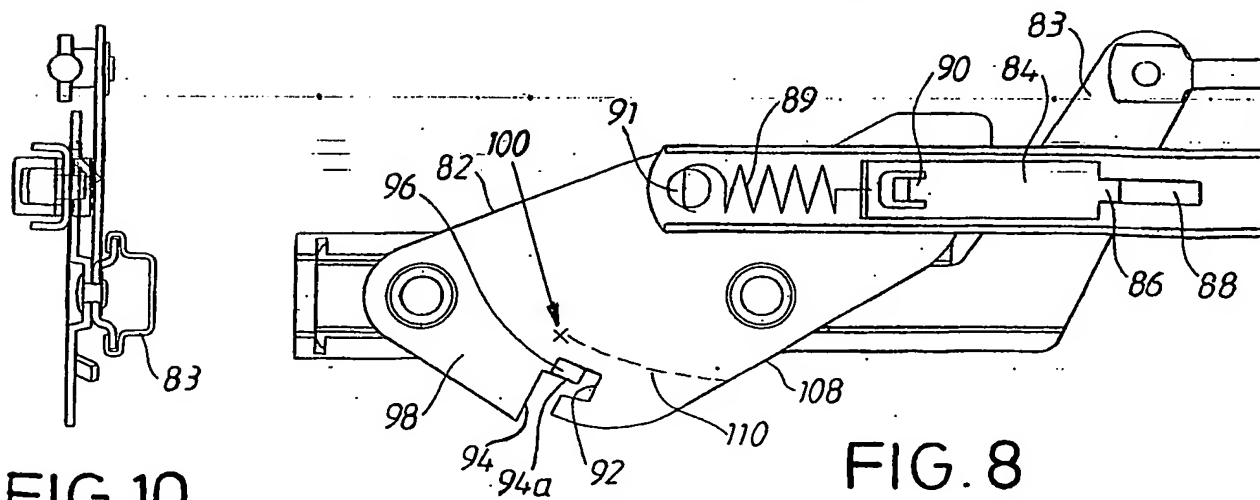
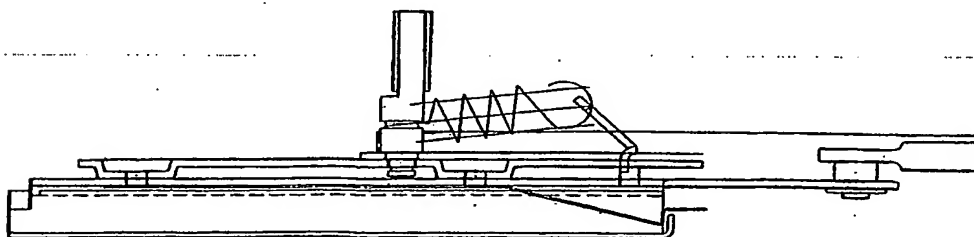
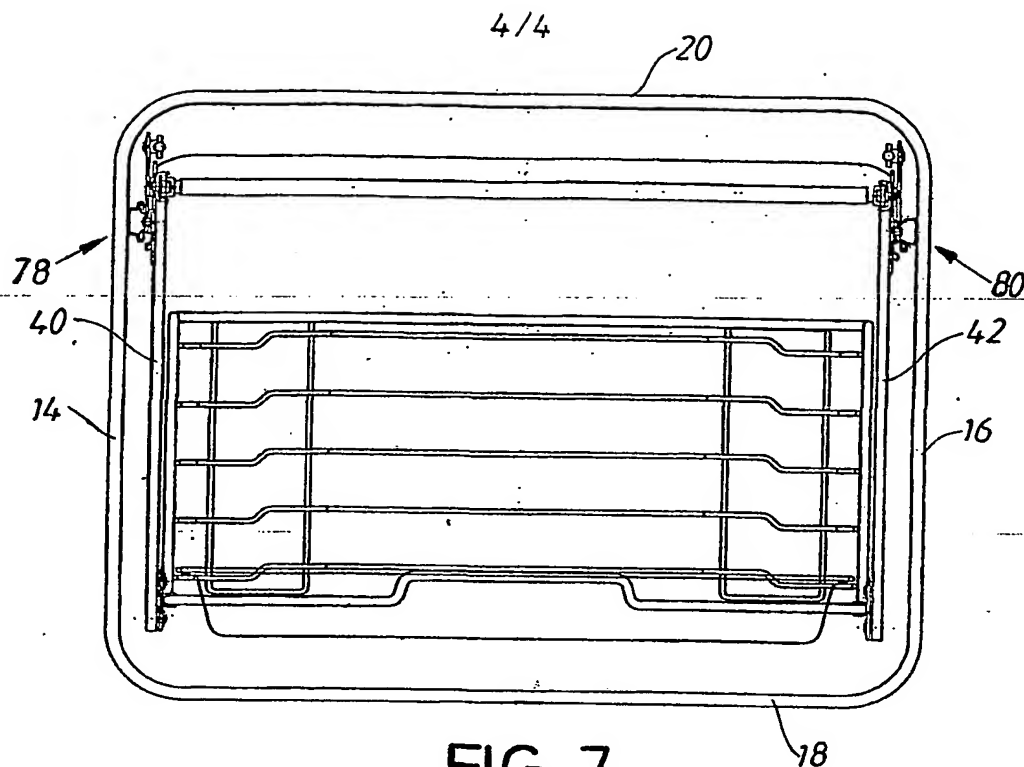


Fig. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/02518

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: F24C 15/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: F24C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI DATA, EPO-INTERNAL, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5447146 A (NICKERSON), 5 Sept 1995 (05.09.95) --	1-14
A	US 5746118 A (BRUNNER ET AL), 5 May 1998 (05.05.98) --	1-14
A	EP 0147815 A2 (ELEKTRA BREGENZ GESELLSCHAFT M.B.H.), 10 July 1985 (10.07.85) --	1-14
A	US 3976000 A (OXEL), 24 August 1976 (24.08.76) -- -----	1-14

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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10 January 2002

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report			Publication date	Patent family member(s)		Publication date
US	5447146	A	05/09/95	NONE		
US	5746118	A	05/05/98	EP	0811807 A	10/12/97
EP	0147815	A2	10/07/85	SE	0147815 T3	
				AT	2384 A	15/04/86
				AT	381621 A,B	10/11/86
				DE	3481341 D	00/00/00
				DK	6785 A	06/07/85
				DK	160959 B,C	06/05/91
				ES	539227 A	16/11/85
				ES	8603055 A	16/03/86
				FI	77959 B,C	28/02/89
				FI	850047 A	06/07/85
				NO	165472 B,C	12/11/90
				NO	850053 A	08/07/85
				AT	134584 A	15/04/86
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